

REMARKS

Claims 1-10 are pending. No new matter has been introduced by this amendment.

1. Claim Rejections under 35 U.S.C. § 102(b)

Claims 1, 4 and 6-10 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Fujiwara (US Pat. Pub 2003-0102875). Applicant respectfully traverses this rejection based on the following remarks.

Applicant's claimed invention detects an on/off switching condition due to a change in capacitance caused by contact between with the electrode and a portion of the human body, such as the finger. Each electrode of the eight circumferentially spaced electrodes includes a capacitance detecting means for detecting an on/off switching condition. Based on the combination of the on/off switching information from all of the eight electrodes, the operating information can be determined, such as operating direction, operating speed and/or contact time. This can be used to provide vector information (speed, direction) and finger tap criteria.

In contrast, Fujiwara determines a position of an electrical conductor 8, such as the operator's finger, based on the difference in capacitance between a primary electrode 2 and each of a plurality of the four secondary electrodes 3. The position of the finger on the operating surface or insulator 7 is determined by a variation of the sum of the capacitance between the primary electrode 2 and each of the secondary electrodes 3. The finger may move between the four distinct areas (3a, 3b, 3c, 3d)

defined by the secondary electrodes so that the capacitance relative to the primary electrode is determined to specify an X-Y coordinate position of the finger.

Fujiwara does not teach or disclose capacitance detecting means provided for each electrode so as to detect from the respective electrodes a variation in capacitance between the electrode and a portion of the human body, and a control unit that receives a detection signal from the capacitance detecting means to detect switching, where the control unit detects operating information including operating direction, operating speed, and/or contact time. In particular, positional calculations are based on the relative values of each capacitance measurement relative to the primary electrode. Accordingly, if one particular sensor in the Fujiwara input device is short-circuited or open-circuited, the entire switch would not function properly. Fujiwara does not teach or disclose the claimed element of a capacitance detecting means for each electrode. This is completely missing in Fujiwara.

In contrast, in applicant's claimed invention, the finger position is calculated independently for each of the eight electrodes. Each sector electrode includes a signal delay means, smoothing circuit and an A/D converter. If one of the sector electrodes failed to function, proper positional information from the other seven sector electrodes would be unaffected.

Further, in applicant's invention, the electrode components are formed in a vertical stacked arrangement. Specifically, the electrode for each section (6a-6h) is formed on a housing 4. An insulation layer 5 is placed on top of the electrode. The second electrode, namely the finger of the operator, presses downwardly against the

insulation layer to vary the capacitance and complete the circuit. Thus, the necessary components are arranged vertically.

In contrast, the Fujiwara input device is a co-planar arrangement. The primary electrode 2 is coplanar with the secondary electrodes 3. There is no vertical stacking. This is clearly shown in Figs. 1 and 3. Paragraph [0006] of Fujiwara discloses that the electrodes are arranged on the same plane. Fujiwara discloses that such a coplanar arrangement is important and overcomes problems with known vertical stacked arrangement. In that regard, Fujiwara discloses that in conventional input devices “the electrodes must be opposed to each other *vertically*, which leads to an increase in thicknesswise dimension and a need of mechanical parts....” (Fujiwara, paragraph [0005]). Accordingly Fujiwara teaches away from applicant’s invention, which clearly uses a vertical electrode arrangement.

Applicant respectfully submits that independent claim 1 is not anticipated by the primary reference to Fujiwara. Further, applicant submits that dependent claim 1-9 are allowable as depending from an allowable base claim.

2. Claim Rejections under 35 U.S.C. § 103

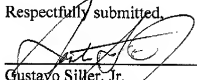
Claims 2-3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujiwara in view of Gillespie (5,880,411). Applicant respectfully traverses this rejection based on the following remarks. Applicant reasserts the above remarks under §102 to traverse the rejection under §103. As set forth above, Fujiwara is completely missing any teaching or suggestion of the capacitance detecting means provided for each electrode. Gillespie does not supply the missing element, and is

used by the Examiner only to show disclosure of the clock circuitry. Applicant submits that the combination of Fujiwara and Gillespie does not provide applicant's claimed invention. According, applicant respectfully submits that claims 2 and 3 are not unpatentable over the combination of the primary and secondary references.

3. Conclusion

Based on the above remarks, the applicant respectfully submits that the claims are in condition for allowance. The examiner is kindly invited to contact the undersigned attorney to expedite allowance.

Respectfully submitted,



Gustavo Siller, Jr.
Registration No. 32,305
Attorney for Applicant

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, IL 60610
(312) 321-4200